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# EUROPEAN PATENT SPECIFICATION

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PCT/GB96/01634

(87) International publication number:  
WO 97/02980 (30.01.1997 Gazette 1997/06)

## (54) FLEXIBLE VESSELS FOR TRANSPORTING FLUENT CARGOES

DEHNBARE BEHÄLTER ZUM TRANSPORT VON FLÜSSIGEN LADUNGEN

CONTENEURS SOUPLES SERVANT A TRANSPORTER DES CHARGEMENTS DE MATIERES  
COULANTES

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NL PT SE

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01.04.1998 Bulletin 1998/14

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US-A- 3 289 721      US-A- 3 983 830

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## CLAIMS:

1. Apparatus for transporting fluent cargo through  
5 liquid comprising one or more units arranged substantially in  
linear alignment, wherein at least one said unit comprises two  
or more flexible containers close coupled side by side.
2. Apparatus according to claim 1, wherein in use,  
10 adjacent facing sides of respective containers of said at  
least one unit are substantially parallel along at least part  
of their length.
3. Apparatus according to claim 1 or 2, wherein no two  
15 consecutive linearly aligned units comprise a single flexible  
container.
4. Apparatus according to any preceding claim, wherein  
each container has angled, front and rear end sections.  
20
5. Apparatus according to any preceding claim, wherein  
each container is parallel sided.
6. Apparatus according to any preceding claim, wherein  
25 the container is diamond-shaped or hexagonal.
7. Apparatus according to any preceding claim, wherein  
the containers are connected at their broadest extent.
- 30 8. Apparatus according to any preceding claim, wherein  
the apparatus comprises alternating sequential units of one  
and two containers.
9. Apparatus according to any preceding claim, wherein  
35 the apparatus comprises three units of one container and two  
units of two containers.

- 9 -

10. Apparatus substantially as hereinbefore described with reference to the accompanying drawings.

1/1  
FIG. 1

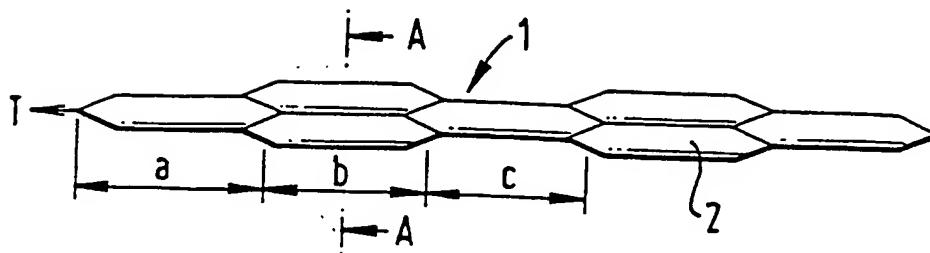


FIG. 2

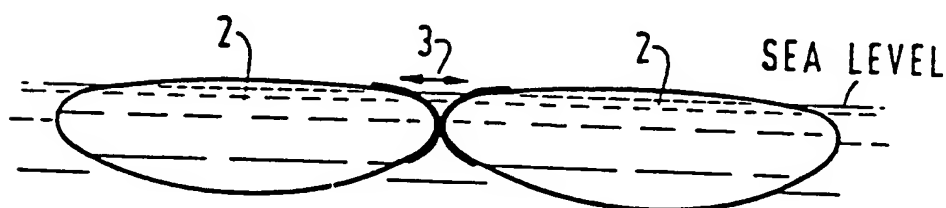


FIG. 3

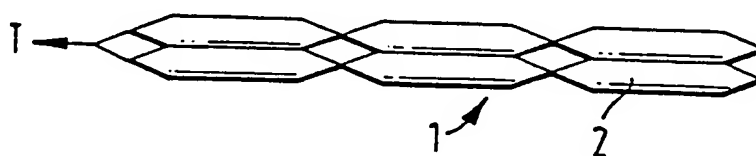


FIG. 4

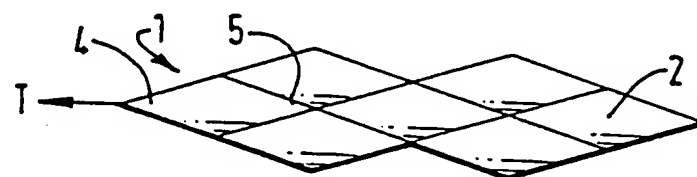


FIG. 5

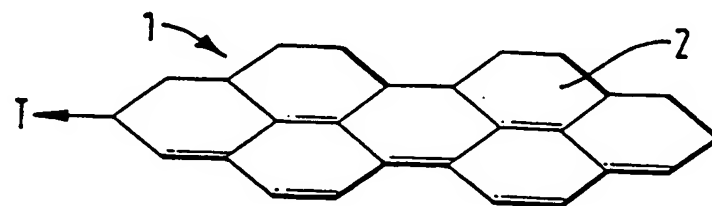
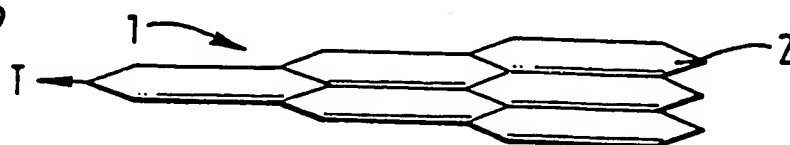


FIG. 6



# INTERNATIONAL SEARCH REPORT

In national Application No  
PCT/GB 96/01634

| <b>A. CLASSIFICATION OF SUBJECT MATTER</b><br>IPC 6 B63B35/28                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                       |                                                                                                                              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| According to International Patent Classification (IPC) or to both national classification and IPC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                       |                                                                                                                              |
| <b>B. FIELDS SEARCHED</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                       |                                                                                                                              |
| Minimum documentation searched (classification system followed by classification symbols)<br>IPC 6 B63B B65D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                       |                                                                                                                              |
| Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                       |                                                                                                                              |
| Electronic data base consulted during the international search (name of data base and, where practical, search terms used)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                       |                                                                                                                              |
| <b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                       |                                                                                                                              |
| Category*                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Citation of document, with indication, where appropriate, of the relevant passages                    | Relevant to claim No.                                                                                                        |
| X<br>Y                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | FR,A,2 210 180 (GRIHANGNE) 5 July 1974<br>see page 3, line 24 - page 4, line 2;<br>figures 1,2<br>--- | 1,2,10<br>3-7                                                                                                                |
| X                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | FR,A,2 377 931 (LEDUN) 18 August 1978<br>see the whole document<br>---                                | 1,2                                                                                                                          |
| Y                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | US,A,3 983 830 (MORGAN) 5 October 1976<br>see figures 1-6<br>---                                      | 3,7                                                                                                                          |
| Y                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | US,A,3 289 721 (BENSON) 6 December 1966<br>see figures 1,2<br>---                                     | 4,5                                                                                                                          |
| Y                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | GB,A,2 181 996 (YANG) 7 May 1987<br>see figures 1-2,1-3<br>---<br>-/--                                | 6                                                                                                                            |
| <div style="display: flex; justify-content: space-between;"> <span><input checked="" type="checkbox"/> Further documents are listed in the continuation of box C.</span> <span><input checked="" type="checkbox"/> Patent family members are listed in annex.</span> </div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                       |                                                                                                                              |
| * Special categories of cited documents :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                       |                                                                                                                              |
| <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> </div> <div style="width: 45%;"> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"a" document member of the same patent family</p> </div> </div> |                                                                                                       |                                                                                                                              |
| Date of the actual completion of the international search<br><br><div style="text-align: center; font-weight: bold;">24 October 1996</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                       | Date of mailing of the international search report<br><br><div style="text-align: center; font-weight: bold;">29.10.96</div> |
| Name and mailing address of the ISA<br>European Patent Office, P.B. 5818 Patentlaan 2<br>NL - 2280 HV Rijswijk<br>Tel. (+ 31-70) 340-2040, Tlx. 31 651 epo nl,<br>Fax (+ 31-70) 340-3016                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                       | Authorized officer<br><br><div style="text-align: center; font-weight: bold;">DE SENA, A</div>                               |

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# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/GB 96/01634

| C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT |                                                                                    |                       |
|------------------------------------------------------|------------------------------------------------------------------------------------|-----------------------|
| Category                                             | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
| A                                                    | <p>US,A,2 682 751 (BOCK) 6 July 1954</p> <p>see figures 11,12 -----</p>            | <p>1-3,5,<br/>7-9</p> |

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 96/01634

| Patent document<br>cited in search report | Publication<br>date | Patent family<br>member(s) | Publication<br>date |
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| GB-A-2181996                              | 07-05-87            | US-A- 4688505              | 25-08-87            |
| US-A-2682751                              | 06-07-54            | NONE                       |                     |

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